

## REMARKS

Claims 15-19 and 21-30 are pending in the application and stand rejected. By the above amendment, claims 15-19 and 21-30 have been canceled without prejudice, and new claims 31-35 have been added. No new matter has been introduced by virtue of the claim amendments.

### Claim Rejections - 35 U.S.C. § 112

Although Applicants respectfully disagree with the rejection of claim 19, this rejection has been rendered moot by cancellation of claim 19.

### Claim Rejections - 35 U.S.C. § 102

(1) Claims 15, 18, 21, 24 and 26-30 are rejected under 35 U.S.C. § 102(b), as being anticipated by Kaganowicz, U.S. Patent No. 5,013,139 (hereinafter Kag 139). Although this rejection is moot by virtue of the cancellation of claims 15, 18, 21, 24 and 26-30, the patentability of new claims 31-35 will be discussed in view of Kag 139.

At the very least, claims 31 and 34 are patentably distinct and patentable over Kag 139. For example, Kag 139 does not teach or suggest, *a non-rubbed  $\text{SiC}_x$  alignment layer having constituent silicon and carbon materials that have a predetermined stoichiometric relationship that imparts a predetermined pretilt angle to the liquid crystal material based on an amount, x, of the constituent carbon material*, as essentially recited in claim 31.

Moreover, Kag 139 does not disclose or suggest, *a non-rubbed  $\text{SiO}_x\text{N}_z$  alignment layer with constituent materials having a predetermined stoichiometric relationship that imparts a predetermined pretilt angle to the liquid crystal material based on amounts, y and z, of the respective constituent oxygen and nitrogen materials*, as essentially recited in claim 34.

Kag139 only discloses an alignment layer for a liquid crystal display device formed by depositing a glow discharge layer comprised of carbon, nitrogen, and hydrogen onto the electrodes of the liquid crystal cell.

Accordingly, new claims 31 and 34 (and corresponding dependent claims) are not anticipated by Kag 139 and are allowable for at least the reasons given above.

(2) Claims 15, 17 and 19 are rejected as being anticipated by Kaganowicz, U.S. Patent No. 5,011,268 (hereinafter Kag 268). Although this rejection is moot by virtue of the cancellation of claims 15, 17 and 19, the patentability of new claims 31-35 will be discussed in view of Kag 268.

At the very least, claims 31 and 34 are patentably distinct and patentable over Kag 268. For example, Kag 268 does not teach or suggest, *a non-rubbed  $\text{SiC}_x$  alignment layer having constituent silicon and carbon materials that have a predetermined stoichiometric relationship that imparts a predetermined pretilt angle to the liquid crystal material based on an amount,  $x$ , of the constituent carbon material*, as essentially recited in claim 31.

Moreover, Kag 268 does not disclose or suggest, *a non-rubbed  $\text{SiO}_y\text{N}_z$  alignment layer with constituent materials having a predetermined stoichiometric relationship that imparts a predetermined pretilt angle to the liquid crystal material based on amounts,  $y$  and  $z$ , of the respective constituent oxygen and nitrogen materials*, as essentially recited in claim 34.

Kag268 discloses inorganic materials for alignment layers in which alignment is obtained by rubbing. Although Kag 268 mentions  $\text{SiON}$ , Kag268 teaches that alignment is performed by rubbing (see Col. 3, lines 33-37). This fundamentally teaches away from the claimed inventions. Therefore, claims 31 and 34 (and corresponding dependent claims) are believed to be patentably distinct and patentable over Kag268.

**Claim Rejections - 35 U.S.C. § 103**

Claims 22, 23 and 25 are rejected as being unpatentable over Kag139 in view of Chaudhari, U.S. Patent No. 6,195,146 (hereinafter Chaudhari). Claims 16 and 18 are rejected as being unpatentable over Kag 268 in view of Onuma (U.S. Patent No. 5,353,151).

These rejections are moot, but the patentability of new claims 31-354 over the cited references will be discussed. Chaudari was cited for its purported teachings of ion bombardment, but such features are not included in any of claims 31-34. Onuma was cited as disclosing SiCx. However, irrespective of the Onuma's teachings with regard to specific compound, Onuma teaches alignment methods that are fundamentally based on realizing uniform alignment state through a high pretilt aligning treatment by rubbing an alignment film. In this regard, the teachings of Onuma and in stark contrast to the claimed inventions having non-rubbed alignment layers where pretilt angles are imparted by virtue of stoichiometric relationships of the constituent materials. As such, Onuma teaches away from the claimed inventions, and is not properly combinable with Kag 268 in view of the Examiner's findings that Kag 268 teaches alignment by non-rubbed alignment layers.

Accordingly, the subject matters of new claims 31-35 are believed to be patentable over any combination of the cited references of record. Withdrawal of the rejections is requested.

Respectfully submitted,



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